

## **DLIST Strategic Framework 2008-2009**

Since so many of the DLIST team projects are focused on the institutional repository and so many projects of other teams are focused on material to add to the repository, DLIST has added a section at the end of this framework that focuses on the technology of the repository titled: [UAIr, the Institutional Repository at the University of Arizona: How We Got Here and Where We're Going.](#)

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### **Vision**

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DLIST is valued on campus for its library information technology services that enhance learning, research and the abilities of customers to effectively use information and technology resources and services. We have a stable, robust IT infrastructure which balances maintaining security and providing open access. Our systems and services are designed and implemented to respect privacy and foster scholarly communication. The digital library and IT products, tools and services that we acquire, develop and integrate optimize access to resources and strengthen library IT processes and infrastructure. Customers are able to consistently and efficiently access content we create, organize and preserve.

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### **Mission**

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DLIST provides and enhances a robust information technology and information access infrastructure as well as diverse services that enable the UA library to achieve its vision.

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### **Customers**

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DLIST workteams serve different primary customers: DCAP and the Institutional Repository's primary customers are the students and faculty of the University of Arizona; XWING's primary customers are the faculty and staff of the Libraries and the Center for Creative Photography.

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### **Mission Critical Processes (MCP) and Quality Standards (QS)**

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DLIST contributes to many critical processes and has established quality standards for our major area, **P12 Managing Information Technology:**

1. For 85% of all Helpline calls users will receive a response within an hour.
2. 85% of Critical Helpline calls will be resolved by a team member within 4 hour of entry into the database.
3. 85% of Priority Helpline calls will be resolved by a team member within 24 hour of entry into the database.
4. 85% of ASAP Helpline calls will be resolved by a team member within 3 days of entry into the database.

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### **Future Team Competencies**

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Project Management Competency: DLIST, as is the rest of the Library, is participating in the project management training and the adoption of the BYU project management process.

Learning New Hardware and Software Competency: The ability to understand, evaluate and make useful to the Library the continually evolving hardware and software solutions so as to take advantage of new and emerging technologies

## Projects

### Current Library-Wide Projects (from PMG's spreadsheet)

Project Name	SP or other category	PI/Project Manager	Sponsor	Begin Date	End Date
ASUS \$400 laptop pilot	Student Fee	Jackie Dee	Sharon Knowlton	7/1/2008	12/31/2008
CMS Program - Single Sign-on Project	Strategic Plan Information Services	Lee Hemphill	Sharon Knowlton	5/30/2008	1/31/2009
Digitization Process Coordination	Strategic Plan Digital Library	Adele Edwards	Sharon Knowlton	9/8/2008	2/9/2009
UA Library Website I Redesign Planning Project (RFP)	Strategic Plan Information Services	Justin Spargur	Sharon Knowlton	Sept. 2008	12/1/2008
UA Library Website II - Redesign Implementation Project	Strategic Plan Information Services	Justin Spargur	Sharon Knowlton	TBD	6/30/2009

### Pending Library-Wide Projects (from PMG's spreadsheet)

Project Name	PI/Project Manager	Sponsor	Description	Start Date	End Date
Course Resource Organizer - Library Website	Justin Spargur	Sharon Knowlton	Focused on developing an application to assist in the development of course pages and subject guides. Must first develop understanding of needs and use of the content before designing application. May overlap with CMS Content project.	Jan. 2009	6/30/09 or later

**Potential Library-Wide Projects (from PMG's spreadsheet) (No DLIST projects in this category)**

Project Name	PI/Project Manager	Sponsor	Project Description	Begin Date	End Date

**Team Projects (from PMG's spreadsheet)**

Project Name	PI/Project Manager	Sponsor	Project Description	Begin Date	End Date
Borderland Apache Collection (part of Arizona Sonora Documents Online digital collection)	Nick Jury	Sharon Knowlton	This is legacy project from when Shan Sutton was here. The documents were scanned and are supposed to be loaded on to ContentDM as part of the Arizona Sonora Documents Online digital collection. The objects are supposed to be loaded by DLIST at this point.		
CCP/Minisis - web access to images	Adele Edwards	Sharon Knowlton	Minisis handoff - Web access to the images will be provided by the Digital Commons/IR. A project between the IR group and CCP will need to be started in 2009 to create a process and determine the parameters of access.	Jan 2009	Jun 2009
IR Metadata added to Innovative	Nick Jury	Sharon Knowlton	Add IR metadata into Innovative catalog and thus into OCLC	Mar 2009	Jun 2009
Library Website Hardware Upgrade	Jackie Dee	Sharon Knowlton	Migration will take place FY08/09; Update from DLIST 09/09/2008 Update: Dependency on Library Website Redesign, consultant may recommend changing the server platform.		
Rangelands West	Jeanne Pfander	Sharon Knowlton	Needs Assessment, Business Plan Development and Technical Requirements Development for the Rangelands West portal	3/11/2008	3/31/2009
USGS Sonoran Desert Research Station Technical Report Series 1976-2000	TBD	Sharon Knowlton	Technical reports housed historically by The University of Arizona School of Natural Resources and the U.S. Geological Survey Sonoran Desert Research Station (SDRS), Tucson. Early reports were the result of the collaborative efforts of the Cooperative National Park Resources Studies Unit (CPSU/UA), a joint project of the National Park Service and The University of Arizona. Later reports were produced by the SDRS (formerly the Sonoran Desert Field Station). The Series comprises a set of ecological, hydrological, geological, and other environmental studies within southern Arizona and the Sonoran Desert from 1976 to 2000. Intended as practice loading data sets; DLIST identified content	June 2009	Sept 2009

**Team Projects (from DLIST's spreadsheet)**

<b>Project Name</b>	<b>PI/Project Manager</b>	<b>Sponsor</b>	<b>Project Description</b>	<b>Begin Date</b>	<b>End Date</b>
EDC Website Redesign	Adam Engelsgerd	Justin Spargur	Design a Electronic Document Center storefront web presence	Sept 2008	Jan 2009
Exception (blue) Slip and Staff Directory Rewrite	Justin Spargur	Sharon Knowlton	Re-write to make the exception slip an application not a form and to add links to the staff directory	Nov 2008	Dec 2009
GPO web site rewrite	Justin Spargur	Sharon Knowlton		Mar 2009	June 2009
IR Content: Migrate all ContentDM Collections to the IR	Nick Jury	Sharon Knowlton		Mar 2009	Aug 2009
IR Content: Migrate Books of the Southwest to the IR	Nick Jury	Sharon Knowlton		Mar 2009	Aug 2009
IR Content: Migrate Electronic Theses and Dissertations to the IR	Nick Jury	Sharon Knowlton		Apr 2009	Aug 2009
IR Development: Implement Drupal Content Mangement System	Nick Jury	Sharon Knowlton	Migrate the current IR front end applications to the Drupal open source content management system software	Nov 2008	Jun 2009
IR Development: OAI-PMH released for public use	Nick Jury	Sharon Knowlton		Jun 2009	Sept 2009
IR Development: RSS 2.0, Atom 1.0, and SRU functionality released for public and developer use	Nick Jury	Sharon Knowlton		Jun 2009	Sept 2009
IR Grant Proposal Development: NSF/NSDL	Nick Jury Tom Marshall	Sharon Knowlton	Development of an image metadata enhancement tool set and community to provide freeform and thesaurus-based tagging of scientific images.	Mar 2009	Jun 2009

Image Metadata Toolset Grant Proposal					
LessonLink Quarterly Updates	Justin Spargur	Sharon Knowlton		Oct 2008	Jan, Apr, Jul, Oct 2009
Migrate DLIST Z Drive to Intranet	Kent Duryee	Justin Spargur	Migrate all DLIST content from the Z drive to the DLIST intranet site and re-organize the DLIST intranet site	Oct 2008	June 2009
Remedy Helpline Replacement	Jackie Y-B	Adele Edwards	Move from Remedy to the web-based system: OSTicket	Oct 2008	Mar 2009
Spending Reduction Application	Justin Spargur	Sharon Knowlton	Re-write of the faculty comment application	Oct 2008	Dec 2008
VRL Chat Replacement	Adam Engelsjerd	Justin Spargur		Sept 2008	Dec 2008

## **UAIr, the Institutional Repository at the University of Arizona** **How We Got Here and Where We're Going**

We begin our review of UAIr with an overview of where we are that includes many details. We follow this with a history of how we got where we are and other information. Included in **Other Information** is detail that supports our history and decision paths.

### **Current Status**

The University of Arizona Libraries (UAL) has implemented UAIr, formerly known as the Digital Commons. UAIr was alpha released on December 28, 2007, sixty days after the development project began. Initially, UAIr supported four journals, including two by contractual obligation—Meteoritics and Radiocarbon. Our first non-journal collection, the Shantz image collection, was added in May 2008, and our first UAIr exhibit was released in July 2008, (Shantz). In September, UAIr was released in beta, and today, UAIr supports eight published journals and collections. In 2009, UAIr will add at least two other journals, including a first-of-its-kind “borne-digital” journal, the Journal of Ancient Egyptian Interconnections. UAIr will add as many as thirty other collections that will include new content, such as the Joesler architectural documents, the Empire Ranch collections, and Coral Way audio.

As UAIr grows, the systems mature and extend. From our humble beginnings with four journals, UAIr can now support many different collection types, including collections comprised of UAIr-hosted content and content from any other repository in the world.

### **Future**

For as much as we have grown, UAIr still has a long road ahead. Here are some highlights of projects on the horizon.

- ❖ Integrate UAIr content with the Libraries’ catalogs. This will allow individuals searching the Libraries’ catalogs to find publicly exposed UAIr content.
- ❖ Implement audio and video delivery methods. In the coming months, UAIr will ingest many audio and video files, and the system will need to provide means by which people can listen to and watch these files.
- ❖ Ingest all Library CONTENTdm content. As part of UAL’s budget constriction, support agreements with CONTENTdm will end as of June 1, 2009.
- ❖ Integrate Drupal content management system for UAIr Web applications. Drupal will be used to provide Web functionality and to replace our beta proprietary code and to provide a stable framework from which UAIr can mature for years to come.
- ❖ Add E-commerce, a huge undertaking. By mid-2009, we hope to provide configurable eCommerce functionality to support individual subscriptions of journals and the purchase of individual objects.
- ❖ Support the distribution of books. Very soon, UAIr will release a new book in digital form.
- ❖ Release open syndication, including RSS 1.0, RSS 2.0, ATOM, and OAI-PMH.

To all this, there are many, many collections and ideas in the works, and as you can imagine, UAIr’s future is extremely exciting.

## How We Got Here

In 2006, the University of Arizona Libraries (UAL) committed us to the creation, use, and support of an institutional repository. Through the next six months, many decisions were made. Some of these decisions have proved brilliant and innovative. To better understand our path toward the future, we need to review our requirements.

For most of a decade, UAL has been digitizing collections and has developed a wealth of content that resides in various forms and delivery systems. We currently maintain a Sesame repository that is still functioning, and there are a couple dozen collections that are delivered from a local install of CONTENTdm. In the past, we have installed and supported DSpace, and we have supported many homegrown applications and Web sites specifically for digital collections. By creating an institutional repository, UAL decided to consolidate most if not all our digital content into one home and in so doing, established a path of consolidation and uniformity that should prove beneficial to the Libraries in many ways.

Our wealth of digital content required broad and extensible systems. UAL began researching software and systems and methodologies to support a repository system that:

- ❖ Requires no modification of core application code. We do not have the staff to support such work. There are also potential liability and license issues.
- ❖ Is free. Our budgets were stretched in 2006 and are now shrinking.
- ❖ We can extend, hopefully using other free or open-source products, such as PKP's Open Journal System, Omeka, or other Web 2.0 functional delivery components.
- ❖ Can handle multiplicities of content, object, and security models within the same framework. This has proved to be a very difficult requirement. The quantity of our digital content requires a system that can handle a wealth of possibilities.
- ❖ Provides global services, such as search capabilities that may be used across content and object models.

## Project Timeline

- **February 2007:** DLIST selects LAMP (Linux, Apache, MySQL, and PHP) as its core development architecture. This decision effects: a) DLIST staffing; and b) technical project decisions. Members of this team were Justin Spargur (leader), Nick Jury, Yan Han, and Min Seong Kang. Also consulted were Adele Edwards and Bob Grunloh. Barb Hutchinson sponsored and supported the effort and outcome.
- **April 2007:** Repository selection team chose Fedora with the caveat that UAL would not modify Fedora source code. Members of this team were Barb Hutchinson (leader), Sharon Knowlton, Nick Jury, Atifa Rawan, Doug Jones, and Chuck Wommack. The initial selection of Fedora and the caveat (no changes to source code) resulted in many other considerations.
  - ✓ Because of the Feb. 2007 decision (LAMP as an architecture), DLIST and UAL could not support changes to JAVA code.
  - ✓ As a development principle, it is unwise to modify external systems, especially complex systems. Upgrades are painful and expensive, and many other problems can result.
  - ✓ Other repository systems were ruled out based on security concerns, complexity issues, scalability limitations, or cost.

- ✓ DSpace was ruled out because of our multiplicities of component and security models. While DSpace can support each combination in a single install, no one installation could support our needs without major modification in the core Java code.
- ✓ Drupal was ruled out because of security issues. In April 2007, Drupal security problems were significant, and UAL's repository would store user and subscription information (Radiocarbon and Meteoritics include subscription and subscriber information.)

It should be noted that Fedora's advertised functionality has proven difficult and often impossible to implement. At various points in the remainder of this timeline, we include information about the troubles people have experienced with Fedora. Additionally, we include more detail regarding Fedora in our Other Information section, trailing.

- **June/July 2007:** The first repository project team is formed. Work on questions of how UAL will manage digital content are contemplated until the end of the year. The repository project team includes Hayri Yildirim (leader), Yan Han, Doug Jones, Attifa Rawan, Bess Defarber, and Amara Edwards-Koenings.
- **August 2007:** Beginning in August and continuing for two months, Canny Yao, a GA, and Nick Jury configure Fedora to handle multiple journals with different security models (Radiocarbon with institutional and individual subscriptions and JRM without either). The system works as a storage unit. Attempts to extract journal articles using Web applications fail. They learned that the then-current release of Fedora would not support multiplicities of object models and security models.
- **September 2007:** DLIST researches Fedora issues. Other institutions were using Fedora for simple, one-collection implementations. A few large repositories, such as the National Science Digital Library, were devoting large resources to the development of workarounds. A few were using the Fedora JAVA code as a template and modifying heavily to make the system work. Fedora personnel admit some issues but maintain that the code works. DLIST does not learn what the issue actually is.
- **October 2007:** Patrick Barabe is hired as a PHP programmer. DLIST is tasked with supporting Meteoritics as of January 1, 2008 (contractual obligation). After a review of available options (proprietary, DSpace, OCLC, and half a dozen others), DLIST begins development of a MirageMVC-based repository system.
- **December 2007:** The Digital Commons is linked to DokuWiki to provide a wiki Knowledge Base.
- **January 2008:** Outcomes and policies from the first repository project team are incorporated into the Digital Commons Knowledge Base.
- **January 2008:** Alpha release of the Digital Commons. Meteoritics, Radiocarbon, JRM, and Rangelands are included in the alpha release. The Digital Commons boasts management of content by users.
- **April 2008:** Tom Marshall and Nick Jury learn that colleagues at Cornell had questioned Fedora project staff and were told that Fedora works fine for one content model within one object model with one security model. "Not even UVa can make the compound-object functionality work." (Note: Timing +/- 21 days.)
- **Summer 2008:** Fedora and DSpace form a collaboration to deal with security issues (DSpace), scalability (Fedora), and several other significant issues including "enhancements" of compound-object functionality (both systems).

- **June/July 2008:** DLIST releases its first IR-based exhibit (Shantz) using Omeka, a LAMP-based product of George-Mason University. Omeka is integrated into the Digital Commons.
- **August 2008:** Drupal releases version 6.4, a major security release. At the same time, Drupal establishes a security team that will monitor and patch core systems.
  - This is the first time UAL has a viable option for a comprehensive repository system that fulfills our needs and fits our budget and staffing capabilities.
  - Drupal fits well with our architecture.
  - It should be noted that Drupal provides a configurable framework with many functionalities for repositories and content management and ecommerce solutions. Many things will be far, far simpler. Drupal, however, is not an out-of-the-box solution. (There is no out-of-the-box solution at this time.)
- **September 2008:** “UAiR” (the University of Arizona Institutional Repository) is cleared by University attorneys as an acceptable replacement name for “Digital Commons.” The process of making the changes begins.
- **October 2008:** Hiring freeze.

### Other Information

The following is bulleted for convenience and does not reflect chronology or other special importance.

- ✓ The current release of Fedora works with one content model (data model), one object model (journals or images or random collections), and one security model (access levels are the same for everything).
- ✓ Fedora is the only “free” product designed to support multiplicities of content, object, and security models. Had we chosen to implement DSpace, our current production and near-production collection releases would require between 8 and 18 different DSpace installations and a common search functionality would be impossible.
- ✓ With the exception of the most simplistic implementations, each implementation of Fedora is unique. UAL/DLIST evaluated whether ASU’s configuration and implementation of Fedora would work for us. The proposed ASU configuration would work for us. They were focused on a “creator-centric” model, which would not work here. This evaluation was made theoretically from second-hand resources and based largely on the presentations by senior ASU digital library personnel.
- ✓ Some shops have implemented Fedora with complexity. Each has significantly modified or appended to the source code at great cost. Some have been more successful than others.
- ✓ Fedora is redesigning their data model. The initial model is so comprehensive as to be unwieldy.
- ✓ UAL implemented only the Fedora data structure and not the full Fedora system.
- ✓ DLIST and Cabinet have evaluated twice through this process the possibilities of cost savings that could result from outsourcing software, hardware, and digital preservation. UAL is operating beneath all competitive cost quotes, including UITS/CCIT.